SOIL ANALYSIS

Ten soil samples were taken March 10, 2000, to characterize alpha particle and beta particle activity in the prescribed burn plot soils. The average alpha particle activity in affected soils is 16 pico-Curies per gram of soil (pCi/g), with a sample standard deviation of 1.4 pCi/g. The average beta activity is 31 pCi/g, with a sample standard deviation of 2.4 pCi/g. For comparison, the geologic material underlying the prescribed burn plots has a naturally-occurring background alpha particle activity of 22 pCi/g and a naturally-occurring background beta particle activity of 24 pCi/g.[1] Both the alpha and beta activities measured in the prescribed burn plot samples fall within two standard deviations of the naturally-occurring background activity levels for these particles. This is commonly interpreted to indicate no significant difference between the samples and the background.

Additionally, it is worth noting that the alpha activity appears to be lower than the expected activity; if plutonium were present in the samples, alpha activity should be significantly higher than background (plutonium is an alpha emitter, but not a beta emitter). The ratio of alpha activity to beta activity (about 1:2) also indicates an absence of plutonium contamination, given plutonium's decay mechanism of alpha emission only.

[1] Table C-2, Geologic Material UTLs by geologic unit for total radionuclides. Data for Rocky Flats Alluvium (RFA). Taken from *Geologic Characterization Report for the Rocky Flats Environmental Technology Site*, March 8, 1995. Sample Population: 62 samples.